

CLAIMS

1. A method of treating an infertility condition in a human or mammal by exposure of a prospective mother to one or more antigens of a prospective father and to substantially purified TGF β or an effective derivative or analog thereof before attempted conception to elicit an immune reaction leading to tolerance to said one or more antigens to thereby alleviate symptoms of the infertility condition.
2. A method of treating an infertility condition as in claim 1 wherein a mucosal surface of the prospective mother is exposed to the one or more antigens.
3. A method of treating an infertility condition as in claim 2 wherein the mucosal surface is selected from the group comprising an oral mucosal surface, a respiratory mucosal surface, a gastrointestinal mucosal surface or a genital mucosal surface.
4. A method of treating an infertility condition as in claim 2 wherein the mucosal surface is a genital mucosal surface.
5. A method of treating an infertility condition as in claim 2 wherein the one or more antigens and TGF β or derivative or analog thereof is injected for systemic contact.
6. A method of treating an infertility condition as in claim 2 wherein the TGF β or derivative or analog thereof and the one or more antigens are administered at one site.
7. A method of treating an infertility condition as in claim 2 wherein the TGF β or derivative or analog thereof and the one or more antigens are each administered at a first site and a different site respectively.
8. A method of treating an infertility condition as in claim 1 wherein the TGF β or derivative or analog thereof and the one or more antigen are administered temporarily spaced apart.
9. A method of treating an infertility condition as in claim 8 wherein the one or more antigens are administered subsequent to administration of the TGF β or derivative or analog thereof.

10. A method of treating an infertility condition as in claim 8 wherein the one or more antigens are administered first followed by administration of TGFβ or derivative or analog thereof.

5 11. A method of treating an infertility condition as in claim 1 wherein the one or more antigens are chosen as a result of being particularly antigenic and prominent either on the sperm, or on the conceptus.

10 12. A method of treating an infertility condition as in claim 1 wherein the one or more antigens are present on cells taken from the prospective father that contain MHC antigens.

15 13. A method of treating an infertility condition as in claim 12 wherein the antigen is an MHC I antigen of the prospective father.

14. A method of treating an infertility condition as in claim 1 wherein the one or more antigens are administered on leukocytes of the prospective father.

20 15. A method of treating an infertility condition as in claim 1 wherein the one or more antigens are administered on sperm cells of the prospective father.

16. A method of treating an infertility condition as in claim 1 wherein the one or more antigens are administered in the seminal plasma of the prospective father.

25 17. A method of treating an infertility condition as in claim 1 wherein the one or more antigens are presented in purified or semi-purified form.

30 18. A method of treating an infertility condition as in claim 17 wherein the purified or semi purified one or more antigens are presented on inert or adjuvant carriers.

35 19. A method of treating an infertility condition as in claim 2 wherein humans are being treated, and the exposure of TGFβ is to a mucosal surface and the level of TGFβ is greater than 50 ng/ml with a total dose of 150ng/ml

20. A method of treating an infertility condition as in claim 2 wherein the mucosal surface is exposed to a concentration of TGFβ of between 100 and 400ng/ml with a total dose of between 100 to 2000ng.

21. - A method of treating an infertility condition as in claim 1 wherein the TGF β or derivative or analog thereof is supplied in a slow release form.
- 5 22. A method of treating an infertility condition as in claim 1 wherein the exposure of the one or more antigens is to the prospective mother's genital tract in the form of the prospective father's ejaculate, and the level of exposure is determined by the cell count and antigenic density on the surface of such cells.
- 10 23. A method of treating an infertility condition as in claim 2 wherein humans are being treated and the one or more antigens are present on leukocytes, whereby between 10^7 and 10^9 leukocytes are administered to a mucosal surface.
- 15 24. A method of treating an infertility condition as in claim 1 wherein the TGF β is selected from the group of TGF β_1 , TGF β_2 and TGF β_3 .
25. A method of treating an infertility condition as in claim 1 wherein the TGF β is TGF β_1 .
- 20 26. A method of treating an infertility condition as in claim 1 wherein the TGF β is modified.
- 25 27. A method of treating an infertility condition as in claim 26 wherein the modification is selected from the group comprising substitution, deletion or addition mutants, peptide fragments of TGF β or derivative or analog thereof, and peptide fragments of TGF β or derivative or analog thereof which have been incorporated into another protein.
- 30 28. A method of treating an infertility condition as in claim 1 wherein the TGF β or derivative or analog thereof is a member of the TGF β superfamily.
29. A method of treating an infertility condition as in claim 28 wherein the member of the TGF β superfamily is activin.
- 35 30. A method of treating an infertility condition as in claim 1 wherein TGF β is administered in its active form.

31. A method of treating an infertility condition as in claim 1 wherein TGF β is administered in precursor form.
- 5 32. A method of treating an infertility condition as in claim 1 wherein the prospective mother is incapable of converting sufficient of the inactive form of TGF β to active TGF β , and the method of treating includes administration of active TGF β .
- 10 33. A method of treating an infertility condition as in claim 1 wherein the prospective mother is incapable of converting the inactive form of TGF β to active TGF β , and the method of treating includes administration of a compound capable of activating TGF β .
- 15 34. A method of treating an infertility condition as in claim 1 wherein the prospective mother is incapable of converting the inactive form of TGF β to active TGF β , and the method of treating includes administration of plasmin, so as to increase the level of active TGF β .
- 20 35. A method of treating an infertility condition as in claim 1 wherein TGF β is administered in an unpurified form using a biological source rich in TGF β .
36. A method of treating an infertility condition as in claim 35 wherein the TGF β is administered in the form of platelets.
- 25 37. A method of treating an infertility condition as in claim 2 wherein humans are being treated and the exposure to TGF β and male antigen is a multiple exposure.
- 30 38. A method of treating an infertility condition as in claim 37 wherein the multiple exposure is preferably performed over a period spanning at least three months prior to attempted conception.
39. A method of treating an infertility condition as in claim 1 wherein humans are being treated and exposure is at least one week before conception is attempted.
- 35 40. A method of treating an infertility condition as in claim 1 wherein the exposure is before attempted conception

41. A method of treating an infertility condition as in claim 1 wherein administration of TGF β or derivative or analog thereof and the one or more antigen occurs at least once after the prospective date of conception
- 5 42. A method of treating an infertility condition as in claim 41 wherein the exposure continues over a period of the first 12 weeks of pregnancy.
43. A method of treating an infertility condition as in claim 1 first including the step of diagnosing or testing whether the male has adequate levels of TGF β or the
10 female has the capacity to activate TGF β , or alternatively whether anti-sperm antibodies exist.
44. A method of treating an infertility condition as in claim 1 used in conjunction with IVF treatment, whereby the transient hyporeactive immune response is elicited
15 before transfer of the conceptus or gametes is attempted.
45. A method of diagnosing an infertility condition in males by testing the level of TGF β in seminal fluid.
- 20 46. A method of diagnosing an infertility condition in a female by testing for the capacity of the female to convert the inactive form of TGF β to the active form.
47. A composition for use in treating an infertility condition, comprising substantially purified TGF β or derivative or analog thereof and one or more paternal
25 antigens, and a pharmaceutically acceptable carrier, suitable for administration to a mucosal surface.
48. A composition for use in treating an infertility condition as in claim 47 wherein the composition comprises a vaginal gel.
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